

#26/Decl.  
11/10/03  
Hayes

Practitioner's Docket No. MI22-1017

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Anand Srinivasan et al

Application No.: 09/146,839

Group No.: 2814

Filed: September 3, 1998

Examiner: A. Mai

For: Methods of Forming Fluorine Doped Insulating Materials

Assistant Commissioner for Patents  
Washington, D.C. 20231

DECLARATION OF PRIOR INVENTION IN THE UNITED STATES  
OR IN A NAFTA OR WTO MEMBER COUNTRY  
TO OVERCOME CITED PATENT (37 C.F.R. section 1.131)

PURPOSE OF DECLARATION

1. This declaration is to establish conception of the invention in this application in the United States, at a date prior to December 29, 1997, that is the effective date of the prior art U. S. Patent No. 5,876,798, issued to Vassiliev, that was cited by the examiner.
2. The persons making this declaration are the inventors.

FACTS AND DOCUMENTARY EVIDENCE

3. To establish the date of completion of the invention of this application, the following attached documents are submitted as evidence:

Page 1-2 of Invention Disclosure No. 95-0811 (dates redacted)

Page 1-2 of Invention Disclosure No. 95-0797 (dates redacted)

From these documents and/or models, it can be seen that the invention in this application was conceived by the inventors. The undersigned inventors declare that such conception occurred prior to the December 29, 1997 effective date of the Vassiliev reference.

DILIGENCE

4. Below is a statement establishing the diligence of the applicants, from a time just prior to the effective date of the reference, up to the filing of this application. About eight months, five days passed from a time just prior to the December 29, 1997 effective date of the Vassiliev reference up to the September 3, 1998 filing date of this application. During such time, the inventors' assignee obtained legal representation to prepare this application and the inventors corresponded with the representatives in preparation of this application.

**TIME OF PRESENTATION OF THE DECLARATION**

5. This declaration is submitted with the first response after final rejection, and is for the purpose of overcoming a new ground of rejection made in the final rejection. The present final rejection is a first rejection after filing of an RCE wherein new claims 45 and 46 were first presented. Thus, the final rejection of claims 45 and 46 is a new ground of rejection made final upon first action taken by the Office. At least for such reason, this declaration is timely presented.

**DECLARATION**

6. As a person signing below:

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Anand Srinivasan

Inventor's signature \_\_\_\_\_

Date 12/17/02 Country of Citizenship: India

Residence: Boise, Idaho

Post Office Address: 670 S. Clearwater, #201  
Boise, Idaho 83712

\*\*\*\*\*

Gurtej Sandhu

Inventor's signature \_\_\_\_\_

Date 12/16/02 Country of Citizenship: United Kingdom

Residence: Boise, Idaho

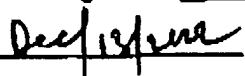
Post Office Address: 2964 E. Parkriver Drive  
Boise, Idaho 83703

Ravi Iyer

Inventor's signature

\*\*\*\*\*  


Date



Country of Citizenship: India

Residence:

Boise, Idaho

Post Office Address: 5600 S. Fuchsia Lane  
Boise, Idaho 83716

\*\*\*\*\*

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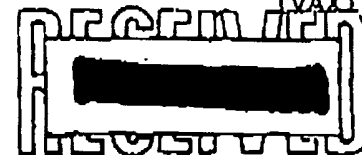
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To: MAKESLING  
Subj: disclosure

Message# 198798

15:37:20.30

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95-0797

If ARPA project,  
please check below:

INVENTION DISCLOSURE

☐ Advanced SRAM  
☐ BST  
☐ FED  
☐ FE RAM  
☐ NCAICM

1. INVENTOR(S): Anand Srinivasan

## 2. DESCRIPTION

## 2.1 Title of invention:

Fluorine doping of boro-phospho-silicate glass ✓

## 2.2 Brief description:

The insulator that is used to electrically isolate different levels is usually BPSG, BSG, PSG, or SiO<sub>2</sub>. This glass is chosen for its low flow temperatures. The addition of fluorine to this glass can further reduce the flow temperatures and reduce the fixed charge problems.

2.3 Also attach a complete description, including drawings or sketches and articles relevant to the invention. Legible photocopies of laboratory notebooks are acceptable.

Undoped SiO<sub>2</sub> films have flow temperatures of 1100 C or higher. The addition of boron or phosphorous to this films reduces the flow temperatures to less than 850-900 C. The addition of fluorine to this system will further reduce this flow temperature. The presence of fluorine will also densify the film and reduce the need to run the reflow process at elevated temperatures for long times. The fluorine doping can also reduce the fixed charge problems and carbon contamination issues that has been related to BPSG deposited using TEOS chemistry.

## 1. INFORMATION CONCERNING CONCEPTION OF INVENTION

## 3.1 CONCEPTION AND DOCUMENTATION OF THE INVENTION

- a. Identify the date when you first conceived the invention. (If not sure, give the earliest date of which you are sure.)

[REDACTED]

- b. To whom was the idea first described and on what date? (Other than a co-inventor.)

[REDACTED]

- c. Identify the date of the first tangible record such as computer simulation, tape out, drawing or written description. Please specify type and location.

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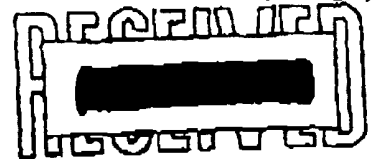
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Message# 166898

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95-0811

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----- Start of forwarded message -----

From: ASRINIVASAN ((Anand Srinivasan 208-368-5525))  
To: MAKESLING  
CC: GSANDHU, RIYER  
Subj: disclosure

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please check below:

INVENTION DISCLOSURE

\_\_\_ Advanced SRAM  
\_\_\_ BST  
\_\_\_ FED  
\_\_\_ FE RAM  
\_\_\_ NCAICM

1. INVENTOR(S): Anand Srinivasan  
Gurtej Sandhu  
Ravi Iyer

## 2. DESCRIPTION

2.1 Title of invention:  
Deposition of fluorine doped BPSG and oxides

## 2.2 Brief description:

1. F-TES (triethoxyfluorosilane) is being used to deposit fluorine rich oxides using a plasma enhanced process. We are proposing a ozone process with F-TES which should give a better step coverage for this dielectric.  
2. This ozone F-TES process can also be used to deposit fluorine rich doped oxides.

2.3 Also attach a complete description, including drawings or sketches and articles relevant to the invention. Legible photocopies of laboratory notebooks are acceptable.

F-TES in combination with the standard TEOS process for deposition of doped oxides in a plasma or a thermal system will provide the fluorine doping in the films. It has been proposed that the addition of fluorine to doped oxides will reduce the flow temperature.

The presence of fluorine will also densify the film and reduce the need to run the reflow process at elevated temperatures for long times. The fluorine doping can also reduce the fixed charge problems and carbon contamination issues that has been related to BPSG deposited using TEOS chemistry.

## 3. INFORMATION CONCERNING CONCEPTION OF INVENTION

## 3.1 CONCEPTION AND DOCUMENTATION OF THE INVENTION

- a. Identify the date when you first conceived the invention. (If not sure, give the earliest date of which you are sure.)

- b. To whom was the idea first described and on what date? (Other than a co-inventor.)

- c. Identify the date of the first tangible record such as computer simulation, tape out, drawing or written description. Please specify type and location.

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